REMARKS/ARGUMENTS

In the Office Action mailed January 17, 2008, claims 1-5 were rejected. In response, Applicants hereby request reconsideration of the application in view of the amendments and the below-provided remarks. No claims are added or canceled.

For reference, claim 1 is amended. In particular, claim 1 is amended to clarify the position of the one or more pole-zero pairs alongside of only the positive imaginary axis of the complex frequency plan. Additionally, claim 1 is amended to clarify that the one or more pole-zero pairs are shifted along the positive imaginary axis off of the real axis of the complex frequency plan. These amendments are supported, for example, by the subject matter described at page 5, line 24, through page 6, line 9.

Objections to the Drawings

The current application is a U.S. National Stage application. The labeling of figures with text matter is prohibited under PCT Rule 11.11, except when absolutely indispensible for understanding. Further, MPEP 1893.03(f) states that "[t]he USPTO may not impose requirements beyond those imposed by the Patent Cooperation Treaty (e.g., PCT Rule 11)." In the present application, Applicants submit that the addition of text labels to the drawings is not "absolutely indispensible" because the individual drawing elements are identified and described in the specification. In view of the above rules, Applicants respectfully assert that additional text labeling is not required in the drawings of the current application.

Claim Rejections under 35 U.S.C. 103

Claims 1 and 3-5 were rejected under 35 U.S.C. 103(a) as being unpatentable over Knutson et al (U.S. Pat. Pub. No. 2003/0163822) in view of Cheung (U.S. Pat. No. 6,476,685, hereinafter Cheung) further in view of Chappell (U.S. Pat. Pub. No. 2002/0141494, hereinafter Chappell). Additionally, claim 2 was rejected under 35 U.S.C. 103(a) as being unpatentable over Knutson in view of Cheung further in view of Chappell and further in view of Sempel et al. (U.S. Pat. No. 6,324,233, hereinafter

Sempel). However, Applicants respectfully submit that these claims are patentable over Knutson, Cheung, Chappell, and Sempel for the reasons provided below.

Independent Claim 1

Applicants assert that claim 1 is patentable over the cited references, despite the assertions in the Office Action, because the references do not teach the limitations recited in the claim. In particular, Knutson does not teach any type of polyphase components. Additionally, Knutson does not teach rejecting negative frequencies, as recited in the claim. Additionally, Cheung does not teach one or more pole-zero pairs alongside of only the positive imaginary axis of the complex frequency plane or the one-or more pole-zero pairs shifted along the positive imaginary axis off of the real axis of the complex frequency plane. Each of these reasons in support of the patentability of the present application over the cited references is treated in more detail below.

I.   Knutson does not teach polyphase components.

Claim 1 recites "the arrangement comprising a polyphase mixer for mixing said specific signal channel to an intermediate frequency which is lower than twice the bandwidth of the channel, a polyphase IF filter for rejecting the negative frequencies in the mixer output signal and a polyphase group delay equalizer connected to the output of the polyphase IF filter" (emphasis added).

The Office Action relies on Knutson as purportedly teaching these limitations. However, Knutson does not teach any polyphase components. In particular, Knutson does not teach a polyphase mixer, a polyphase IF filter, or a polyphase group delay equalizer. While Knutson describes a variety of components, generally, including tunable band pass filters (BPF) 130 and 172, mixers 134 and 174, a BPF 136, and a low pass filter (LPF) 178, Knutson does not describe any of these components as being capable of processing polyphase signals. More specifically, Knutson does not describe any of these components as being capable of processing multiple signals which, relative to one another, are out of phase (i.e., phase shifted), for example, by 90°. Rather, Knutson merely mentions filters, mixers, and other components without teaching any of the described components as being capable of processing polyphase signals. Therefore,

the proposed combination of cited references does not teach all of the limitations of claim because Knutson does not teach <u>polyphase</u> components, including a polyphase mixer, a polyphase IF filter, and a polyphase group delay equalizer, as recited in claim. Accordingly, Applicants respectfully submit that claim 1 is patentable over the combination of Knutson, Cheung, and Chappell at least because the combination of cited references does not teach a polyphase mixer, a polyphase IF filter, and a polyphase group delay equalizer.

II.   <u>Knutson does not teach rejecting negative frequencies.</u>

Applicants respectfully note that this argument was presented as a separate basis for patentability in Applicants' response to the previous Office Action. However, the Examiner did not provide any response to the traversal of the rejections based on the failure of Knutson to teach rejecting negative frequencies. The MPEP requires that, in response to Applicants' traversal of the rejection, the Examiner should take note of Applicants' argument and answer the substance of it. MPEP 707.7(f). For this reason, Applicants iterate the same arguments in this response and request that the Examiner provide an answer specific to these arguments.

Claim 1 recites "a polyphase IF filter for <u>rejecting the negative frequencies in the mixer output signal</u>" (emphasis added).

The Office Action relies on Knutson as purportedly teaching this limitation. However, Knutson does not teach a filter to reject negative frequencies in the output signal of the mixer 134 of the course tuner function 36 of the outdoor unit 24. As explained previously, Knutson is silent as to the frequency characteristics of the resulting frequency output by the mixer 134. Moreover, even if Knutson were to describe negative frequencies output by the mixer, Knutson does not describe rejecting negative frequencies in the output signal from the mixer 134. Although Knutson describes filtering out undesired noise signals (Knutson, paragraph 52), Knutson does not describe the undesired noise/signals as including negative frequencies.

Additionally, Knutson does not teach a filter to reject negative frequencies in the output signal from the mixer 174 of the fine tuner function 44 of the indoor unit 30. Although the Office Action states that the low pass filter (LPF) 178 connected to the

output of the mixer 174 purportedly rejects the negative frequencies in the mixer output signal, the actual disclosure of Knutson does not support this assertion by the Examiner. In fact, a review of the disclosure of Knutson shows that Knutson merely states that the output of the mixer 174 is input to the low pass filter (LPF) 178, and that the output of the low pass filter (LPF) 178 is input to an amplifier 180. There is no other description in Knutson of the low pass filter 178. Hence, Knutson does not describe the low pass filter 178 as rejecting negative frequencies in the output signal of the mixer 174. Moreover, it should be noted that the low pass filter 178 described in Knutson presumably operates in a typical fashion to pass low-frequency signals and to attenuate, or cut off, higher-frequency signals. There is no explanation in the Office Action, however, to address how the low pass filter 178 would treat <u>negative frequencies</u> of a polyphase system. In other words, Knutson does not provide enough information about the low pass filter 178 to teach rejecting negative frequencies in a polyphase system, and the Office Action further fails to explain how the low pass filter 178 might be implemented to reject negative frequencies in a polyphase system, as recited in the claim.

Therefore, for these reasons, the proposed combination of cited references does not teach all of the limitations of the claim because Knutson does not teach rejecting negative frequencies in the mixer output signal, as recited in claim. Accordingly, Applicants respectfully submit that claim 1 is patentable over the combination of Knutson, Cheung, and Chappell at least because the combination of cited references does not teach rejecting negative frequencies in the mixer output signal.

III.   <u>Cheung does not teach pole-zero pairs only in the positive imaginary quadrants of the complex frequency plane.</u>

Claim 1 recites "the transfer function of the group delay equalizer has, for the frequency range of interest, <u>one or more pole-zero pairs alongside of only the positive imaginary axis</u> of the complex frequency plane with the pole(s) and the zero(s) of said one or more pairs lying substantially symmetrically with respect to said positive imaginary axis, wherein the one or more pole-zero pairs are <u>shifted along the positive imaginary axis off of the real axis</u> of the complex frequency plane" (emphasis added).

In contrast, Cheung does not teach pole-zero pairs alongside of only the positive imaginary axis and shifted along the positive imaginary axis off of the real axis. Cheung merely depicts two representations of pole-zero pairs in a complex frequency plane. The pole-zero pair shown in Fig. 4A is located on the real axis and, therefore, is not shifted along the positive imaginary axis off of the real axis. The pole-zero pairs shown in Fig. 4B are located on both sides of the real axis (i.e., in the positive imaginary quadrants and in the negative imaginary quadrants). Therefore, the pole-zero pairs shown in Fig. 4B are not located alongside of only the positive imaginary axis of the complex frequency plane.

Since neither of these pole-zero pairs depicted in the illustrations of Cheung satisfies the conditions of the limitations recited in claim 1, the proposed combination of references does not teach all the limitations of the claim because Cheung does not teach pole-zero pairs alongside of only the positive imaginary axis and shifted along the positive imaginary axis off of the real axis. Accordingly, Applicants respectfully submit that claim 1 is patentable over the combination of Knutson, Cheung, and Chappell at least because the combination of cited references does not teach pole-zero pairs alongside of only the positive imaginary axis and shifted along the positive imaginary axis off of the real axis.

Dependent Claims 2-5

Claims 2-5 depend from and incorporate all of the limitations of independent claim 1. Applicants respectfully assert claims 2-5 are allowable based on an allowable base claim. Additionally, each of claims 2-5 may be allowable for further reasons, as described below.

In regard to claims 4 and 5, Applicants respectfully submit that the reasoning presented in the present Office Action does not present a clear articulation of the reason why the claimed invention would have purportedly been obvious. In order to establish a *prima facie* rejection of a claim under 35 U.S.C. 103, the Office Action must present a clear articulation of the reason why the claimed invention would have been obvious. MPEP 2142 (citing *KSR International Co. v. Teleflex Inc.*, 550 U.S. __ (2007)). Thus, an Office Action which does not present a clear articulation of the reasons why a claimed

invention would have been obvious fails to establish a *prima facie* rejection under 35 U.S.C. 103.

Here, the Examiner appears to conclude that using cascaded equalizers having the same or different components would allow an implementation to take advantage of different delay responses and to obtain a desired pole-zero pattern. Office Action, 1/17/08, page 6, last full paragraph of section 3. Applicants respectfully note that this appears to be the most reasonable interpretation of the language provided in the Office Action, given the many disparate ideas which are included in the only sentence of the paragraph. With this understanding of the arguments presented in the Office Action, Applicants respectfully submit that the Examiner's remarks fail to address the actual limitations of claims. In particular, this reasoning does not address how the cited references might teach a cascade of group delay equalizer's with different pole-zero patterns, as recited in claim 4. Similarly, the reasoning does not address how the cited references might teach a cascade of group delay equalizer's with different pole-zero patterns, as recited in claim 5.

Moreover, the reasoning in the Office Action, as understood by Applicants, merely asserts that desired pole-zero patterns may be obtainable. The statement that "same or different for the cascaded equilizers in order to take advantage of different delay response of cascaded equalizers to compensate over a required frequency spectrum" does not add anything to address the limitations of implementing equalizers with the same or different pole-zero patterns. In fact, it is not clear that the indicated statement from the Office Action is even directed to pole-zero patterns, since the statement appears to be directed to implementing the same or different cascaded equalizers, generally, in order to obtain particular pole-zero patterns.

In any case, Applicants respectfully submit that the language provided in the Office Action does not present a clear articulation of the reason why the individual limitations of claims 4 and 5 might have been obvious, in light of the claim language as a whole. Therefore, the Office Action does not establish a *prima facie* rejection of claims 4 and 5 because the Office Action does not present a clear articulation of the reasons why the limitations of the claims might have been obvious. Accordingly, Applicants respectfully request that the rejections of claim 4 and 5 under 35 U.S.C. 103(a) be

withdrawn because the Office Action does not establish a *prima facie* rejection of claims 4 and 5.

CONCLUSION

Applicants respectfully request reconsideration of the claims in view of the amendments and remarks made herein. A notice of allowance is earnestly solicited.

At any time during the pendency of this application, please charge any fees required or credit any over payment to Deposit Account **50-3444** pursuant to 37 C.F.R. 1.25. Additionally, please charge any fees to Deposit Account **50-3444** under 37 C.F.R. 1.16, 1.17, 1.19, 1.20 and 1.21.

Respectfully submitted,

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